



Toluene

General Information

Key Points

- toluene is clear, colourless flammable liquid with a sweet, pungent odour
- used in the manufacture of explosives, paints, thinners, inks, dyes, glues, rubber, plastics and many other organic compounds
- also used as a solvent, in pharmaceuticals and as a fuel additive
- toluene vapours can cause drowsiness, dizziness, headache, sickness and memory problems
- inhaling large amounts of toluene can cause permanent damage to the nervous system, coma, heart problems and even death
- substance abuse (glue sniffing) often involves the abuse of toluene-based products
- there is evidence to suggest that mothers whom abuse toluene while pregnant may give birth to babies with birth defects
- toluene is not known to cause cancer

Public Health Questions

What is toluene?

Toluene is clear, colourless flammable liquid with a sweet, pungent odour.

What is toluene used for?

Toluene is used to manufacture lubricants and greases, anti-freeze products, biocides, non-metal-surface treatment products, inks and tones, leather treatment products, polishes and waxes, textile treatment products and dyes, fuels and adhesives and sealants. It is also a by-product of the process of making coke from coal.

Toluene has been used in the past as a treatment for hookworms and roundworms.

How does toluene get into the environment?

Toluene occurs naturally in crude oil and in the Tolu tree. It may also enter the environment after being released from fuels and from evaporation of toluene-containing products such as paint and paint thinners, adhesives, lubricants and anti-freeze. Toluene may also enter surface and ground water after spills but it does not persist in the environment.

How might I be exposed to toluene?

Toluene is widely used; therefore exposure may occur from a number of sources, including drinking water, food and air. People may breathe in small amounts of toluene when using products containing toluene, for example machine wash detergents, car care products fragrances and air fresheners. Also breathing in emissions from motor vehicles and aircraft exhausts will expose people to toluene. Glue sniffing and smoking are both potential sources of exposure to toluene.

If I am exposed to toluene how might it affect my health?

The presence of toluene in the environment does not always lead to exposure. In order for it to cause any adverse health effects, you must come into contact with it. You may be exposed by breathing, eating, or drinking the substance or by skin contact. Following exposure to any chemical, the adverse health effects that you may encounter depend on several factors, including the amount to which you are exposed (dose), the way you are exposed, the duration of exposure, the form of the chemical and if you were exposed to any other chemicals.

Toluene can cause irritation to the eyes, throat, lungs and skin. Toluene can be absorbed through the skin and pass into the blood stream although this is rare.

Breathing in vapours from toluene can cause irritation to eyes, nose, throat and airways. Once in the blood system it can cause drowsiness, dizziness, headache, sickness and

memory problems. Exposure to large amounts of toluene (e.g. from glue-sniffing) can cause permanent damage to the nervous system, coma, heart problems and even death.

Drinking toluene can cause stomach-ache and vomiting. It can be easily absorbed into the blood system where it causes similar problems as described above.

Frequent low exposures to toluene can cause heart problems, kidney problems, low blood potassium and muscle weakness.

Can toluene cause cancer?

Toluene is not considered to be carcinogenic.

There is inadequate evidence in humans to assess if toluene causes cancer and available animal data does not indicate that toluene is carcinogenic.

Does toluene affect pregnancy or the unborn child?

Toluene may cause harm to the unborn child if the mother is exposed to large amounts, such as from solvent abuse.

How might toluene affect children?

Children exposed to toluene will have the same symptoms as adults.

What should I do if I am exposed to toluene?

You should remove yourself from the source of exposure.

If you have got toluene on your skin remove soiled clothing (not over the head), wash the affected area with lukewarm water and soap for at least 10 – 15 minutes and seek medical advice.

If you have got toluene in your eyes remove contact lenses, wash the affected area with lukewarm water for at least 10 – 15 minutes and seek medical advice.

If you have inhaled or ingested toluene seek medical advice.

Additional sources of information

UKTIS Best Use of Medicines in Pregnancy: <http://www.medicinesinpregnancy.org/>

NHS Choices- Drugs: <http://www.nhs.uk/Livewell/drugs/Pages/Drugshome.aspx>

FRANK- Glues, gases and aerosols: <http://www.talktofrank.com/drug/glues-gases-and-aerosols>

This information contained in this document from the PHE Centre for Radiation, Chemical and Environmental Hazards is correct at the time of its publication.

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